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SOLUTION BY BENJAMIN F. YANNEY, College of Wooster, Wooster, Ohio.

Let the digits in the initial order be

$$a_n, a_{n-1}, \dots, a_1.$$

Then by hypothesis,

$$a_n 10^{n-1} + a_{n-1} 10^{n-2} + \dots + a_2 10 + a_1 \equiv 0 \pmod{p}.$$

Multiply each member of the congruence by 10, remembering that $10^n \equiv 1 \pmod{p}$, and place the digit a_n in units place. We thus secure one cyclic permutation. Another cyclic permutation is secured by multiplying again by 10; and so on. This completes the proof.

It will be observed that the theorem may be generalized by multiplying all the terms to the left of any specified term by $10^{\kappa n}$, in the case of any cyclic permutation, where κ is any positive integer. Thus, in the example given, 480001, 800000014, and 140000000008 are also each multiples of 37. By successive application of this method, we may obtain different types of cyclic permutations. Thus, 400000080001 is a multiple of 37. We may have other than cyclic permutations, with ciphers, by multiplying any one or more terms of the above congruence by $10^{\kappa n}$, where κ can have a different value for each term multiplied. Thus, 80401 is also a multiple of 37. It is interesting to note in this more general application that no two integers of the original number can ever collide.

Also solved by L. C. MATHEWSON, PHILIP FRANKLIN, W. R. RANSOM, FRANK IRWIN, PAUL CAPRON, HORACE OLSON, and C. C. YEN.

262 (Number Theory). Proposed by C. N. SCHMALL, New York City.

If x, y, z , are 3 integers, consecutive among the integers prime to 3, show that

$$x(x - 2y) - z(z - 2y) = \pm 3.$$

SOLUTION BY EDWARD H. VANCE, Graduate Student, Ithaca, N. Y.

Let $v - 1$ be any number divisible by 3, then any set of three integers consecutive among the numbers prime to 3 may be represented by one of the following sets:

$$v - 2, v, v + 1; v, v + 1, v + 3.$$

Substituting $v - 2, v, v + 1$ for x, y, z , respectively, in the lefthand side of the given equation we have

$$x(x - 2y) - z(z - 2y) = 3.$$

Substituting $v, v + 1, v + 3$ for x, y, z , respectively, we have

$$x(x - 2y) - z(z - 2y) = -3.$$

Also solved by PAUL CAPRON, N. P. PANDYA, LOUIS O'SHAUGHNESSY, LEWIS CLARK, E. F. CANADAY, GEORGE W. HARTWELL, J. L. RILEY, ALBERT G. RAU, HERBERT N. CARLETON, HORACE OLSON, and V. M. SPUNAR.

QUESTIONS AND DISCUSSIONS.

SEND ALL COMMUNICATIONS TO U. G. MITCHELL, University of Kansas.

DISCUSSIONS.

I. ON MAKING MATHEMATICAL RESULTS MORE AVAILABLE FOR ENGINEERS.

By WILLIS WHITED, Harrisburg, Pennsylvania.

Some time ago I received a circular from the Mathematical Association of America regarding the *Annals of Mathematics*. I like very much the idea of a